ABSTRACT OF THE DISCLOSURE

The present invention adds a gel-swellable layer in fiber optic cables to aid in protecting the fibers within the cable. The gel-swellable layer can be placed on the fibers, individual ribbons, stacks of ribbons and on the inner surface of tubes by various methods, such as co-extrusion, and can be cured by either heat curing or UV curing. The gel-swellable layers of this invention can be either smooth or textured. When the fibers are placed into the tubes and the tubes are filled with the water resistant gel, the gel-swellable layer absorbs some of the gel causing it to "swell". As a result of the "swelling" a certain volume of gel is absorbed by the layer, thus reducing the capability of the gel to flow at elevated temperatures. Additionally, the swelled layers create a desirable stiffness transition from harder (less swelled) particles at the surface of the fiber to softer (more swelled) particles on the surface of the swelled layer. This variable-stiffness swelled layer then acts as a bumper and positioning structure between the fibers and the buffer tube or outer jacket, keeping the fibers in the center of the tube, and preventing the outer fibers from contacting the tube when the gel begins to break down at higher temperatures. Further, the swelling action results in the absorption of the lower-viscosity components of the gel, thereby reducing the likelihood of oil separation in the gel, which leads to gel breakdown. In addition, gel-swellable layers serve as lubricating layers allowing individual fibers in the fiber bundle and ribbons in the ribbon stacks to slide with respect to each other under applied thermo-mechanical loads thus reducing contact stress and associated fiber bending and buckling and attenuation problems.